

Meeting of the Decommissioning Project Community Workgroup (#29)
Wednesday, October 18, 2006
NASA Plum Brook Station Engineering Building

The meeting began at 5:30 p.m. The following Workgroup members were present: Anne Hinton, Bill Ommert, John Blakeman, Mike Yost, Bob Speers, Chris Gasteier, Rick Myosky, Ralph Roshong and Sharon Schaeffer. Representing NASA were Acting Project Manager Keith Peacock, Project Environmental Manager Peter Kolb, NASA Glenn Public Affairs Specialist Sally Harrington, Chief of Management at Plum Brook Station Rich Kunath and NASA Glenn Safety and Assurance Deputy Rafael Sanabria. Susan Santos, Michael Morgan and Anne Chabot of FOCUS GROUP were present. Joining the meeting were James Cameron of the Nuclear Regulatory Commission Region 3, Rob Stone of the Ohio Department of Public Health, and 14 members of the public as well as NASA Glenn History Office staff.

Opening Remarks

Sally Harrington welcomed everyone to the 29th Community Workgroup meeting. She announced that the Community Information Session would be following the workgroup meeting. She briefly described the evening's events and encouraged workgroup members to participate.

Acting Project Manager Keith Peacock introduced Rafael Sanabria, NASA Glenn Research Center Director of Safety and Mission Assurance, Rob Stone from the Ohio Department of Health, which is the lead state agency with oversight of the Decommissioning Project, and James Cameron of the Nuclear Regulatory Commission Region 3 Office in Chicago.

Susan Santos asked for and received acceptance of the July 2006 Workgroup meeting minutes. Susan reviewed the meeting agenda and pointed out that Keith would be reporting on the status of the project since the July workgroup meeting, and therefore this presentation contains information geared toward workgroup members already familiar with the project. The presentation he would be giving later at the CIS would be more of an overall introduction and a description of activities accomplished since last year's CIS meeting.

Project Update

Keith reported that work continues on all fronts: Hot Cell #1 decontamination is done; embedded pipe cleaning continues; sampling in Sandusky Bay is ongoing; and NASA has begun preparing the 'Completion Contract' Request for Proposal (RFP) – determining the contractor(s) to complete of the remaining project tasks. Keith anticipates issuing that RFP in January 2007 to be in place next year at this time.

Keith reported that NASA Program Manager Frank Greco has moved to another position at NASA Glenn. The Program Manager position has been posted and the selection will be announced shortly. Keith also noted that the Nuclear Regulatory Commission had undergone an internal reorganization consolidating all decommissioning projects to one

group. NRC inspector Tom Dagroun has retired. A new project manager, David Nelson who has replaced project manager Pat Isaac, will be visiting the site next month.

Hot Cell Work

Workers have successfully completed the decontamination of Hot Cell #1 to below NASA's Derived Concentration Guide Lines (DCGLs) and work will now shift to Hot Cells 2 through 7, which is projected to take four months to complete. These same workers have been removing asbestos floor tiles. They have completed tile removal in the Reactor Office Laboratory Building, Hot Cell Gallery, Waste Handling Building, and Service Equipment Building bringing the total asbestos removed to 21,000 square feet.

Embedded Piping

Work continues on track (even though there is more piping than originally thought), with a total of 11,000 feet of piping now cleaned (everything from one-inch electrical conduit to 24-inch water main line). Subcontractor BSI recently brought the Hydrolazing (high-powered vacuum) unit back onsite to address the 400 feet of pipe that proved resistant to abrasive mechanical cleaning. It will also be used on 600 feet of drain lines, mostly from the Fan House, that were found to contain oily residue. The Project Team is now examining what, if any, cleaning is needed for any buried piping. (Embedded piping is in concrete underneath buildings; buried piping is pipe systems covered with dirt but not concrete, i.e., storm drains). Thirty-three thousand feet of buried piping has been identified to date.

Characterization

Characterization has focused on the overheads, i.e., beams and rafters, of the Reactor Building, Hot Lab, Fan House, and Waste Handling Building. Keith noted there have been no surprises, with most areas clean or nearly so, and only isolated areas that will require decontamination and at that can be easily wiped off. Plum Brook characterization is now looking at areas identified by Haag Environmental (Bob Haag had given a presentation at last meeting on what the hydrogeologic analysis showed) to ensure all "nooks and crannies" have been examined. To date, groundwater well silt samples have been collected and sent offsite for laboratory analysis. Currently samples are being collected in Sandusky Bay. Keith showed an area map to help explain how lake levels have shifted over time and where sediment could have been deposited. Keith reiterated that this is confirmatory sampling and he doesn't believe any significant amount of cesium will be seen from background levels.

Keith showed workers standing in water shin deep and taking samples 4" to 10" deep. Then he explained that Haag Environmental is using a modified pontoon boat for taking samples further out in the Bay. Workers and samples are shuttled to shore by way of canoe. Keith described the geoprobe, which is a log steel pipe containing a plastic sleeve that holds the sample. The sample is sliced into 3-inch lengths, labeled and sent to an offsite laboratory for analysis. Keith mentioned that the subcontractor MOTA radiation protection technicians (NASA contractors who would be conducting sampling if it were on-site) have been working effectively with Haag Environmental scientists.

Next three months....

Keith identified the priority tasks in the next three months. One priority is to continue cleaning embedded piping. In January of last year Keith had projected 10,000 feet of embedded piping would take 10 months to clean. Since that time, Keith noted that they have cleaned more (11,000 feet) - with another 4,000 feet of piping they weren't expecting and another 5,000 feet of conduit from the Hot Cells (for a total of close to 20,000 feet). This work is progressing very well.

Decontamination work will continue in the Hot Cells, to be followed by other hot laboratory areas as appropriate. Keith's aim is to get as much decontamination finished prior to when the completion contract is awarded for finishing decommissioning (estimated fall 2007).

Once the current sampling effort in Sandusky Bay is completed, Haag Environmental scientists will proceed with sampling in other areas including marshland at the mouth of the bay, and other areas that may have experienced periods of overflow. Keith also stated that he would be continuing to work on the RFP for the Completion Contract. In addition, he would be finalizing and issuing the formal RFP for disposal of the cadmium control rods, which are currently safely stored onsite at Plum Brook Station. Keith explained the delay was due to the fact that Energy Solutions recently bought Duratek and the contact person NASA has been working with was transferred to another post. Keith reiterated that the rods remain in safe on-site storage.

Workgroup member Chris Gasteier asked Keith how more embedded piping was found. Keith responded that they had examined about 5,500 drawings. Some drawings didn't correctly identify existing piping (pipes had evidently been added after the drawing). Keith said that only while surveying each length of pipe using a camera inside the piping were they able to identify the extra piping. In the end, all piping will be accounted for. Cleaning the 5,000 extra feet from the Hot Cell conduit will be easily accomplished. The more challenging part is the pneumatic tube that had been used to send experiments in and out of the Hot Cell. The pipe is a bit dented in spots. If spots continue to be difficult to clean, these tubes are in shallow (6 inches deep in a 5 foot wall) locations and can be dug out and removed.

Workgroup member John Blakeman asked if the workers were wearing protective clothing. Keith said that workers on embedded piping did not need it. He said that while workers are in the Hot Cells they wear respirators for protection not from radiation, but from silica as they decontaminate the surface of the concrete.

Rob Stone of the Ohio Department of Public Health asked if given the number of underground pipes and NASA's work on them, would NASA be sampling downstream? Keith responded that when they dig up buried piping they would block off the discharge path and any water coming off of the work would be sampled before being discharged. Keith mentioned that when Pentolite Ditch is cleaned next summer NASA would build an earthen dam to control, collect and sample any water from the process.

Workgroup member Ralph Roshong asked when taking samples out of the bay do they test differently wet or dry? Keith said that the samples have to be dry to analyze because the water acts as a radiation barrier. Keith asked Bob Haag, of Haag Environmental to comment. Bob said that they were originally going to screen samples in the field but decided that analyzing the samples in 3-inch sections would give a higher quality read of radionuclides in the laboratory. The values of dry samples are higher per gram than when they are wet.

Keith noted that he had received some questions from workgroup members since the last Workgroup meeting that he wanted to address.

1. Who decided to remove the reactor at NASA originally? Keith said that the decision by the NASA Glenn Research Center management (the licensee) was based on two facts: the NRC informing NASA that they did not see a viable safety-based reason to extend our 'possess but not operate' licenses for the reactors, and the results of a NASA Inspector General investigation that showed that delaying decommissioning was not fiscally responsible.

2. What was the original cost estimate for the project? \$160 million.

3. What is the current cost level (money spent to date)? \$138 million.

4. What is the current cost estimate for completion of the project?

NASA knows that the currently approved funding level of \$160 million will not be sufficient to complete the project. NASA has developed a cost estimate, which is being checked by Headquarters against an independent estimate. Ultimately, the bids for the Completion Contract will determine the full cost.

5. With the current knowledge of the removal process, would the same decision be made to remove the reactor? Yes. Nothing that has been found would provide a technical justification for not proceeding with decommissioning. Keith said, "If we knew then what we know now some of the approaches to decommissioning might have changed."

Chris Gasteier asked if there was anything that would help other ongoing decommissioning projects. Keith said yes he had given a paper at a nuclear waste management conference on "lessons learned". Some of the things that were mentioned were to do complete characterization up front and don't start work until procedures are in place. Keith cited important lessons he'd learned such as identifying and working with retirees. Keith said that one of the most productive lessons was getting word out early and often and building a relationship with the community. Some professional groups are setting up Websites to better share these lessons with other sites.

Rob Stone asked what happened to research that was conducted at the Reactor Facility. Did it move elsewhere? Keith said that much of the materials testing research in the United States was abandoned in the early 1970s while Russians continued with it. Keith mentioned that one effort of this current decommissioning project was to collect historical knowledge. NASA historian Bob Arigee spent about a year sorting through 200 boxes of records and organized it for use by other researchers.

John Wright, a member of the public in attendance, asked why they didn't start the Reactor Facility up again? Keith said that all nuclear work was consolidated under the Department of Energy because they had the facilities. It wasn't feasible to bring the Reactor Facility back on line even if they wanted to.

A final question Keith had received in advance was, "If a similar reactor were to be built, would it be built the same way? If not, what differences would be incorporated?" Keith responded that while the PBRF was state of the art at the time of its construction the industry has learned some things since then. They include:

- Eliminate use of asbestos throughout the plant (lagging, electrical panels, insulation, floor tile, Q&C mastic)
- Use stainless steel vs. black iron in drain lines (wouldn't have rust), and build as originally planned, with sweeping corners, not hard turns
- No hot lines buried directly in soil, build all with concrete sleeves and leak monitoring (like new gas station designs)
- Many more post-TMI safety systems would have to be in place
- Decontamination rooms/facilities would be built into the original floor plan.

Ongoing Activities at Plum Brook Station

Chief of Plum Brook Management Office Richard Kunath announced that the future of Plum Brook Station looks secure because the Agency determined that the B-2 Facility and the Space Power Facility will be kept and funded in an active status directly supporting the exploration of the moon and Mars activities. Rich began his presentation by explaining the terms associated with a brand new launch vehicle (the crew exploration vehicle now called "Orion" and the crew launch vehicle now called "Aries").

Plum Brook Station is involved in testing the Aries upper stage J-2X engine. B-2 (the Spacecraft Propulsion Research Facility) is the world's only full-scale thermal vacuum high altitude rocket engine and upper stage facility. B-2 is a facility having a 38 feet diameter by 62 feet tall stainless steel vacuum chamber with a 10^{-7} torr long duration (pumping one million pennies each representing a molecule of air and by the end only one penny remains) vacuum capability. It has a built-in cryogenic cold wall (LN_2 @ -320F – simulating in space temperatures) and can produce a solar thermal simulation via quartz lamp array (1400 watts/m² radiant heat over 105° arc). This facility has been used (past customers) for 80 firings of current RL10B-2 engine for Delta 3 development, and 12 firings of the Delta 3 upper stage. Rich said that the engines tested are liquid hydrogen/liquid oxygen. The facility was so "robustly built" that it was determined that the facility could test the space shuttle engines at 500,000 pounds of thrust. The current request is for a J-2 engine at 300,000 pounds of thrust. Two major modifications that must be made to the B-2 Facility to accommodate the higher thrust levels and burn durations are a new exhaust diffuser (pipe between the vacuum and spray chambers) and a new higher-volume, chilled-water system. A new water tower will be built onsite that will hold 5 million gallons.

The engine will run for 500 seconds. Rich emphasized that it takes a lot fuel to get into orbit and each test run will require 80,000 gallons of hydrogen fuel. At Lewis Field a

dummy model of the upper stage Aries L-1 will be built to simulate the mass of the upper stage. It will be launched into space to see what happens in flight. All structural dynamics, i.e., vibration testing, stress testing, etc. will be done in the Space Power Facility at Plum Brook Station. Ares1-1 is scheduled for launch in 2009. Refurbishing the B-2 Facility for J2-X will begin in the middle of 2010 to launch in 2012.

Future activities include lunar access model engine testing. SPF will be Ares 1-1 testing and building a sandbox (100 feet in diameter) elevated about 3 feet deep filled with simulated lunar surface.

John Blakeman asked if the facility only works with liquid hydrogen/liquid oxygen engines and not with engines that use other fuels. Rich responded that it was originally built for and can accommodate other types of engines.

Bill Ommert asked about jobs. Rich responded that the changes were being planned in two phases. During the rehabilitation/modification of the facility, an outside architectural engineering firm will be hired. Then to implement the design changes, NASA will be piecing out contracts to take advantage of various expertise. Rich estimates that 60-70 people will be employed during that first phase while during operation, he estimates there will be about 35 employees.

Chris Gasteier asked if NASA Plum Brook would be testing the engine on module (Orion). Rich answered that originally, that engine was scheduled to be liquid oxygen and methane but it was determined that combination hasn't been developed enough yet. The engine would now be using hypergolic. NASA will be determining safety measures associated with hypergolics. Chris also asked if it's possible to simulate the 190,000 foot high mark. Rich responded that right now the facility can simulate 130,000 feet. He said that it can't get any lower pressure without it pushing the cost too high. He reiterated that the Plum Brook facility is at the highest altitude that anyone can simulate. The J2-X had only been tested before at 80,000 feet. He said it would be possible to pump down the chamber and do the absolute start at that low pressure.

John Blakeman asked if there were any safety measures of bringing in that much liquid hydrogen on the roads (since there is no rail). Rich said that they are looking at potentially generating hydrogen from NASA's own natural gas sources. Representative Kaptur is also interested in NASA's potentially doing so for fuel cells. The closest place that would supply liquid hydrogen is Ontario. The trucks, he said, would not go through residential neighborhoods but through Scheid Road.

Community Relations Update/Community Information Session Preview

Sally Harrington announced that the recent issue of the "Decommissioning News" newsletter had recently been distributed to the extensive mail list. She invited people to take copies of any of the material that is available on tables. Sally announced that a video regarding the Ares and Orion projects would be available for viewing during the CIS. She mentioned the media briefing that took place in the morning. Then Sally asked Rafael Sanabria to speak. Rafael presented an award to Susan Santos and FOCUS

GROUP as NASA's Woman-Owned Contractor of the Year for outstanding management of the community relations program at Plum Brook Station. Sally reiterated what Keith had said earlier that successfully building community relationships early in the project were due in large part to the expertise of FOCUS GROUP.

Topics for Next Meeting

Susan announced that the next workgroup meeting would take place in January 2007. Topics would include a project update and any available off-site sampling results.

The Workgroup meeting adjourned at 6:45 p.m.